

Department of Materials Science and Engineering
MSE 300 Materials Science & Engineering
Introduction to Materials Science and Engineering (2 credits)

Catalog Description:

Introduces the materials field to new department majors. Examples are drawn from ceramics, metals, polymers, electronic materials and composites. Structure/properties/manufacturing/design relationships are emphasized. Offered: A.

Prerequisites:

None

Textbooks and other required materials:

Course Syllabus

“How to Succeed as an Engineer,” T. Yazuriha, J and K Publishing

Course objectives:

1. Solve a complex engineering materials problem using background science and mathematic knowledge along with basic engineering principles to choose the best material for a specifically assigned materials application.
2. Demonstrate the functioning of a diverse team of students in the solution to the assigned problem.
3. Plan and present a 3-minute talk about yourself and a 15-minute team talk on your project.
4. Write a team final report with recommendations
5. Describe the role of materials engineers in modern engineering practice.
6. Identify professional aspects of materials engineering practice and ethical aspects related to everyday problems in engineering.

Topics Covered:

Department introduction
Department faculty, procedures, history, curriculum
Safety training
Careers and career planning in materials engineering
Introduction to design
Team problem solving

- Materials in design
 - Aerospace materials applications and usage
 - Quantitative design
- Communications
 - Communications issues and case studies
 - Written and oral reporting
 - Development of a personal strategic plan
 - Developing a resume
 - Individual and team oral presentations
 - Individual and team written reports
- Professionalism
 - Materials/engineering as a profession
 - Student professional societies
 - Introduction to ethics
 - Ethics case studies and examples
 - Plagiarism

Class Schedule:

Two, two hour sessions weekly

Contribution of course to meeting the professional component:

This course introduces design and professionalism to the students and includes an in-depth design project.

Contribution of course to program objectives

This course provides students with experience in design of a system component; the relationship between design, materials selection and economics; experience in functioning on a team, experience in oral and written communication; experience in the development and solution to engineering problems; an understanding of professional and ethical responsibility; and provides the students with an example of the relationship between structure, properties and processing of materials.

Prepared by:

Thomas Stoebe, Professor
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